

EDUCATION

- Nanyang Technological University** Singapore
Ph.D. in Computer Science, cGPA:4.60, Advisor: Prof. Jun Luo 2019–Current
– Courses: Computational Intelligence, Deep Learning for Data Science, Digital Communication Systems, Convex Optimization, Image Analysis & Pattern Recognition
- University of Toronto** Toronto, Canada
M.Eng. in Computer Engineering and Analytics, A+ 2017–2019
– Courses: Computer Security, CUDA Programming, Algorithms and Data Structure, Cloud Computing, Data Science and Analytics, Machine Learning, Big Data Science
- Harbin Institute of Technology** Harbin, China
B.Eng. in Telecommunication Engineering, Grade: 90.18 (Top 3%) 2013–2017
– Courses: Calculus, Linear Algebra, Probability Theory, Signals and Systems, Electronic Circuit, Embedded System, Computer Networks, Electromagnetics, Antenna Design, FPGA Design

EXPERIENCE

- Nanyang Technological University** Singapore
Graduate Student Researcher at Computer Networks and Communication Lab (CNCL) 2019–Current
– Deep Learning for Wireless Networking and Sensing
- University of Toronto** Toronto, Canada
Developer at Communications & Advanced Electronics Lab Summer 2018
– Android App Development for Digital Signal Processing
- Sungkyunkwan University** Suwon, South Korea
Undergraduate Researcher at Communication & Coding Theory Lab (CCL) Summer 2016
– Coding and Decoding of Polar and LDPC Code

PUBLICATIONS

(* denotes co-first author.)

1. **Tianyue Zheng**, Zhe Chen, Shujie Zhang, Chao Cai, and Jun Luo, “MoRe-Fi: Motion-robust and Fine-grained Respiration Monitoring via Deep-Learning UWB Radar”, in *Proc. of the 19th ACM SenSys*, 2021, pp. 1–14.
2. **Tianyue Zheng**, Zhe Chen, Jun Luo, Lin Ke, Chaoyang Zhao, and Yaowen Yang, “SiWa: See into Walls via Deep UWB Radar”, in *Proc. of the 27th ACM MobiCom*, 2021, pp. 323–336, <https://dl.acm.org/doi/10.1145/3447993.3483258>.
3. Zhe Chen*, **Tianyue Zheng***, and Jun Luo, “Octopus: A Practical and Versatile Wideband MIMO Sensing Platform”, in *Proc. of the 27th ACM MobiCom*, 2021, pp. 601–614, <https://dl.acm.org/doi/pdf/10.1145/3447993.3483267>.

4. Zhe Chen*, **Tianyue Zheng***, Chao Cai, and Jun Luo, “MoVi-Fi: Motion-robust Vital Signs Waveform Recovery via Deep Interpreted RF Sensing”, in *Proc. of the 27th ACM MobiCom*, 2021, pp. 392–405, <https://dl.acm.org/doi/pdf/10.1145/3447993.3483251>.
5. Zhe Chen, Chao Cai, **Tianyue Zheng**, Jun Luo, Jie Xiong, and Xin Wang, “RF-Based Human Activity Recognition Using Signal Adapted Convolutional Neural Network”, *IEEE Transactions on Mobile Computing*, pp. 1–1, 2021, <https://ieeexplore.ieee.org/document/9408395>.
6. Shuya Ding, Zhe Chen, **Tianyue Zheng**, and Jun Luo, “RF-Net: a Unified Meta-Learning Framework for RF-Enabled One-Shot Human Activity Recognition”, in *Proc. of the 18th ACM SenSys*, pp. 517–530, <https://dl.acm.org/doi/10.1145/3384419.3430735>, 2020.
7. **Tianyue Zheng**, Zhe Chen, Shuya Ding, and Jun Luo, “Enhancing RF Sensing with Deep Learning: A Layered Approach”, *IEEE Communications Magazine*, vol. 59, no. 2, pp. 70–76, 2021, <https://ieeexplore.ieee.org/document/9374635>.
8. **Tianyue Zheng**, Zhe Chen, Chao Cai, Jun Luo, and Xu Zhang, “V²iFi: in-Vehicle Vital Sign Monitoring via Compact RF Sensing”, in *Proc. of the 20th ACM UbiComp*, 2020, 70:1–27, <https://dl.acm.org/doi/abs/10.1145/3397321>.

PROJECTS

Vital Sign Monitoring via Compact RF Sensing

- Implement IR-UWB/FMCW radar systems that monitor human vital signs, e.g., respiration, heartbeat, and interbeat interval (IBI).
- Perform theoretical analysis of human vital sign and working principles of commodity radar systems.
- Design novel signal processing algorithms, e.g., MS-VMD for decomposition of vital sign signals.
- Adapt state-of-the-art deep learning algorithms, e.g., GAN and autoencoder, for vital sign waveform recovery and health issue diagnosis.
- Implement the algorithms on embedded device and assess the system in real-life road test.

RF-based Human Activity Recognition using Deep Learning

- Experiment with different sensing schemes (e.g., UWB, mmWave, Wi-Fi, and acoustic) that recognize everyday human activities and estimate human pose.
- Propose a layered framework: physical layer, backbone network layer, generalization layer, and application layer to facilitate researcher to make improvement proposals in the future.
- Adopt state-of-the-art deep learning techniques such as meta-learning and transfer learning to solve the problem of data scarcity and environment adaptation.

PROFESSIONAL SERVICES

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| • Reviewer for <i>IEEE Internet of Things Journal</i> | 2021 |
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TEACHING

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| • Teaching Assistant at Nanyang Technological University
<i>Computer Networks (CE3005/CZ3006)</i> and <i>Introduction to Computational Thinking (CE/CZ1003)</i> | 2019–2021 |
| • Teaching Assistant at University of Toronto
<i>Communication Systems (ECE316)</i> | Spring 2019 |

SKILLS

- **Programming Languages:** Python, Java, C/C++, Matlab
- **Tools:** PyTorch, Tensorflow, PySpark, Scikit-Learn, Pandas, Matplotlib, Seaborn, Git, Vim, Flask, Docker

SCHOLARSHIPS AND AWARDS

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| • Research Scholarship at Nanyang Technological University | 2019–2023 |
| • Second Prize in Innovation and Entrepreneurship Contest at Harbin Institute of Technology | Summer 2016 |
| • Honorable Mention in Mathematical Contest in Modeling (MCM) | Summer 2015 |
| • Scholarship for Outstanding Students at Harbin Institute of Technology | 2013–2017 |